



Unearthing Operational Inefficiencies in Real Estate

Switch Automation's cloud-based solution collects and analyzes operational data from building assets using an Intel®-based intelligent gateway.

“We combine comprehensive building performance data with operational data, enabling informed decisions that save time, money, and resources of all kinds.”

Deborah Noller
CEO, Switch Automation

For many large organizations, improving building performance and operations and viewing operational performance across all physical assets within a portfolio present real challenges. Too often, the information used to help building and property managers make informed decisions is inaccessible—locked away in spreadsheets, databases, and disconnected systems throughout the company. For instance, viewing exactly how a specific building uses energy or when internal systems malfunction isn't always possible.

Switch Automation offers a cloud-based and Internet of Things (IoT)-enabled software platform aimed at helping companies discover inefficiencies in their real estate holdings. The solution employs Intel® IoT technologies to collect system information that delivers unmatched visibility, insight, and control of building operations and real estate portfolios.

Staggering Amounts of Scattered Data

Although building systems generate massive amounts of data, it is usually presented in an overly complex, unusable way. This is because many buildings have a large number of proprietary interfaces—making it difficult for building managers seeking to quickly gather, analyze, and implement building-performance data to make decisions.

Enterprises need to find ways to efficiently merge data from different types of assets, service providers, customers, and financial systems (as shown in Figure 1). The goal is to create a single source of data or a single source of truth—by aggregating valuable data into one, easy-to-understand dashboard that provides full visibility into operational performance to reduce costs, empower teams, and manage/minimize risks.

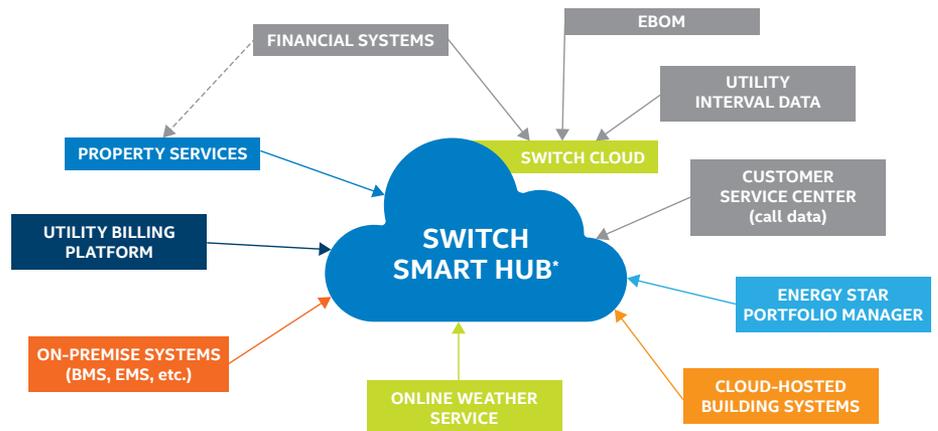


Figure 1. Many data sources with different interfaces



Use Case: Bringing Disparate Building Data under One Roof

Forest City Enterprises, Inc. is a national real estate company that manages everything from modern shopping centers to complex commercial facilities to old residential buildings. There are obvious differences in how each property was designed, built, or acquired and in how each is run, serviced, and managed. This made it difficult for corporate-shared resources (e.g., domain experts, like the energy program manager) to manage the overall operations of the property portfolio and add value to the individual, geographically dispersed properties.

As a result, the Forest City portfolio of buildings and systems was not optimized, consuming unnecessary time and money in energy, water, maintenance, and services expenditures. Senior managers at Forest City determined the need for a low-risk solution to pull all of their data into one place and analyze it for better building operations.

In April 2015, Forest City implemented the Switch Automation solution across 10 buildings, allowing their building technology team to:

- Use a phased approach and scale up quickly and effectively
- Access data and analytics within days of implementation
- Create immediate visibility into the performance of service providers, like building management system (BMS) contractors, to ensure accountability
- Develop a proactive controls system based on hard data
- Measure and verify operational efficiency results
- Create a customized alert system to flag operational adjustment needs
- Measure ROI for internal stakeholders and public-facing, high-stakes corporate social responsibility objectives
- Set informed operational improvement targets

As a result of integrated building operations data, Forest City identified one particular shopping mall in California that was severely underperforming. Switch Automation's customizable charts and historical data alerts revealed the problem—a central plant upgrade project was not fully commissioned. With precise visibility into the problem and an alert/control plan put in place, Forest City now aims to save around 20 percent in potential energy costs for that one building alone, and expects to pay for the entire 10-building, phase one implementation within a year.

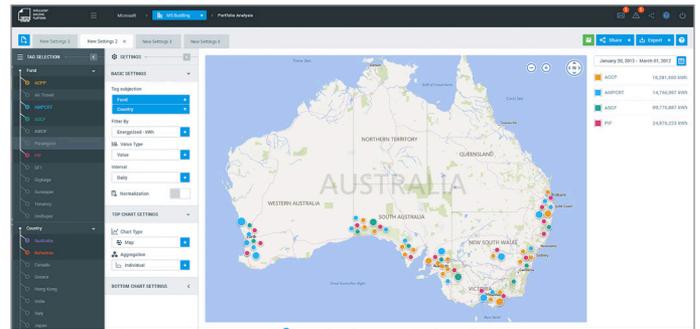
Cloud-Based Solution Puts Data to Work

Switch Automation offers a cloud-based platform for enterprise operations, building management, and sustainability reporting. Building information is collected and sent to the cloud from a wide variety of systems already in place. Other sustainability information, such as transportation, energy use, paper consumption, waste generation, and more, can also be integrated.

Switch Automation puts building data to work in three simple steps:

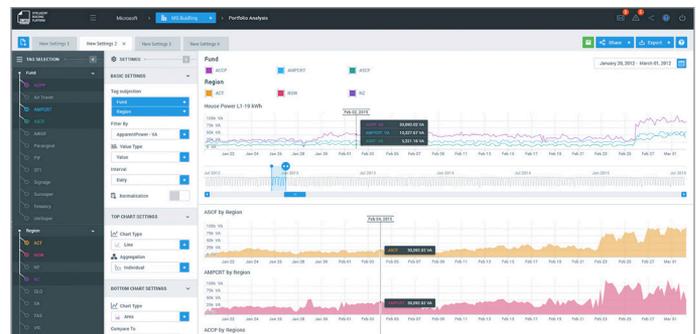
1. Data Collection

By aggregating all operational data, Switch Automation enables a sophisticated portfolio-wide view of operations—from work orders and people counting to energy and service calls.



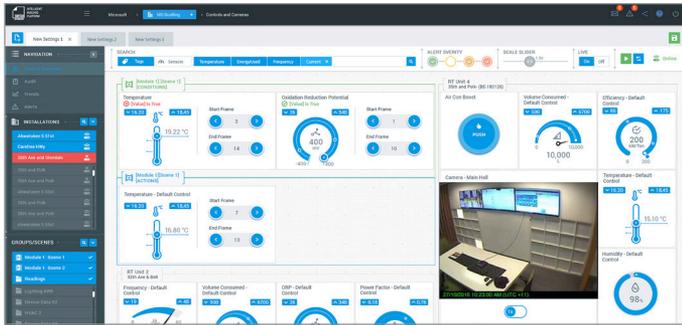
2. Analytics-Based Monitoring

Switch Automation provides analytics and diagnostics to deliver deep insights into building and portfolio performance with actionable data, including real-time alerts. The Switch Automation platform provides detailed information, enabling accurate reporting of operational metrics, while integrating a wide range of sensors, controllers, and renewable energy sources.



3. Asset Control

Buildings can be securely controlled from anywhere, at any time, and from any device—all with powerful features like cloud-based automation, a single simplified interface, and centralized command and control graphics—including IP camera feeds.



Real-World Deployment

Switch Automation's end-to-end software solution is both industry and hardware agnostic, and delivers cost-effective, quickly deployed solutions for corporate and commercial real estate owners, healthcare, education, government, manufacturing, multi-family residential, and hospitality enterprises.

Solution Architecture

Switch Automation's architecture, shown in Figure 2, connects building devices, OEM systems, and utility or other data sources to the Switch Cloud*. Facilitating these connections are Switch Gateways*, file import wizards (where custom file "mappings" can be used to automate transfers), and a Switch API, all of which enable existing and new sources of data to be rapidly collected and analyzed.

The Switch platform may be controlled from a web browser and automation logic can be configured in the cloud, then stored and executed on the gateway.

Switch Gateway

Based on the Intel® IoT Gateway, the Switch Gateway enables seamless and secure data flow between building devices and the cloud, making it an ideal monitoring and control system. Providing pre-integrated, pre-validated hardware and software building blocks from Intel, the gateway is a key ingredient for enabling the connectivity of legacy devices and other systems to the IoT. It integrates technologies and protocols for networking, embedded control, enterprise-grade security, and easy manageability on which application-specific software can run.

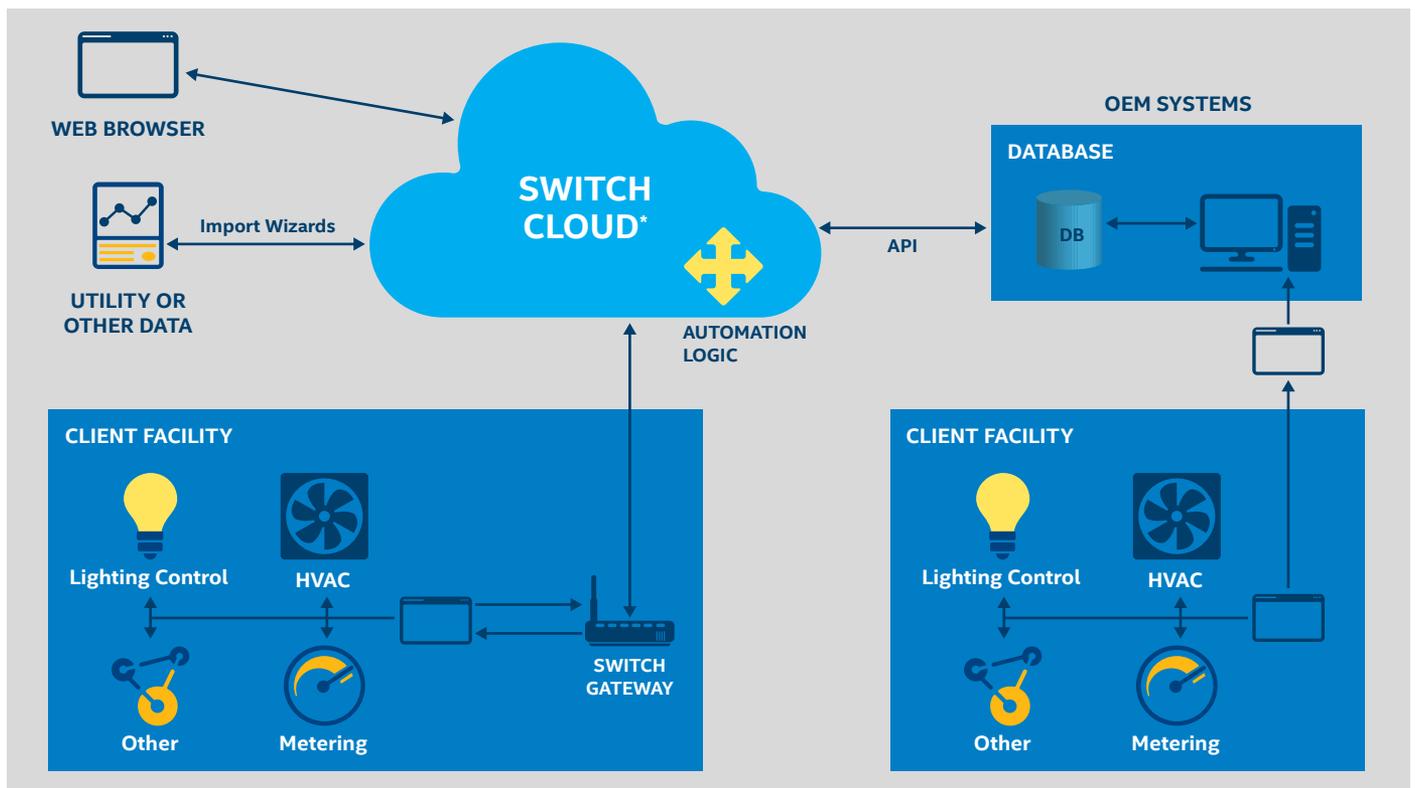


Figure 2. Switch Automation architecture

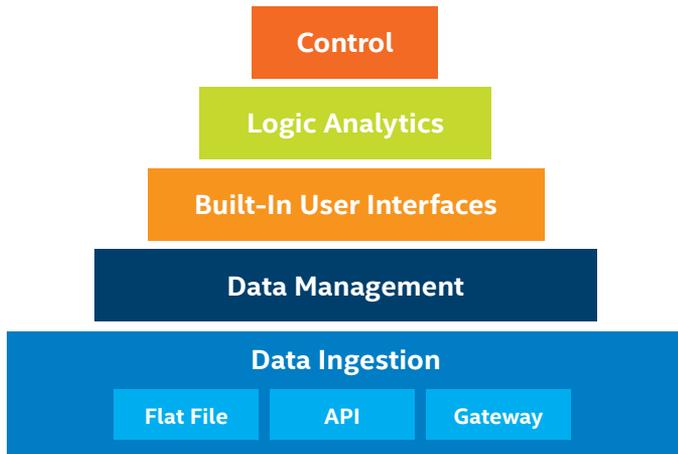


Figure 3. Switch Automation capabilities

Key Capabilities

The Switch Automation platform provides portfolio-wide data ingestion, data management, user interfaces, logical analytics, fault detection, and control, as shown in Figure 3. Whereas many other solutions on the market typically support just one or two of these capabilities, Switch Automation does them all to deliver a truly comprehensive solution:

- **Data ingestion** using gateways, APIs, and a flat file mapping and import tool
- **Data management** including historical files, live device integration, APIs, historians, and tagging
- **Built-in user interface** displaying charts, graphical analysis, and dashboards
- **Logical analytics** supporting fault detection, diagnostics, and alerts
- **Control** enabling decisions to be pushed back to building systems

These capabilities help property and building managers take advantage of some significant benefits:

- **Convenience**
Access all building-related data on any web-enabled device—anywhere, anytime—in a preferred reporting format.
- **Efficiency**
Avoid running multiple systems, so building managers can view, analyze, and interpret building-related data in a single platform.
- **Continuous Improvement**
Gain valuable operational insights with analysis tools that allow building managers to benchmark costs and consumption patterns across their holdings.
- **Customer Alignment**
Influence every occupant's energy consumption usage by displaying key operating data in a visually pleasing format.
- **Simplicity**
Monitor and control lighting, air conditioning, access control, and other systems remotely from a central operations center with a simple, unified interface for all building operations.
- **Return on Investment (ROI) Metrics**
Measure overall ROI by pulling information from meters to determine the effectiveness of specific initiatives— parking light retrofit, interior motion sensors, HVAC, and more.

Horizontal and Open IoT-Based Solutions

Switch Automation's long-standing partnership with Intel has allowed them to participate in an innovative, Intel-powered ecosystem for IoT solution providers. Intel's focus on developing open, horizontal solutions that make it easier to put data in a central place is closely aligned with the Switch Automation cloud-based approach. Moving forward, Switch Automation plans to adopt Intel's upcoming gateway that features support for Microsoft Windows* 10.

For More Information

For more information about solutions from Switch Automation, visit switchautomation.com.

To learn about smart building solutions from Intel, visit intel.com/iot/smartbuilding.

